**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 78.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Casey, William
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-029999
**Date Inspected:** 12-Sep-2013

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Steward Machine Co.

**OSM Arrival Time:** 600
**OSM Departure Time:** 1600
**Location:** Birmingham, AL

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| **CWI Name:** | Fred Hudson & Jimmy Brewer | **CWI Present:** | ☑ Yes ☐ No |
| **Inspected CWI report:** | ☑ Yes ☐ No ☐ N/A | **Rod Oven in Use:** | ☐ Yes ☐ No ☑ N/A |
| **Electrode to specification:** | ☑ Yes ☐ No ☐ N/A | **Weld Procedures Followed:** | ☑ Yes ☐ No ☐ N/A |
| **Qualified Welders:** | ☑ Yes ☐ No ☐ N/A | **Verified Joint Fit-up:** | ☐ Yes ☐ No ☑ N/A |
| **Approved Drawings:** | ☑ Yes ☐ No ☐ N/A | **Approved WPS:** | ☑ Yes ☐ No ☐ N/A |
| | | **Delayed / Cancelled:** | ☐ Yes ☑ No ☐ N/A |

**Bridge No:** 34-0006
**Component:** E2 Shear Key Anchorages

**Summary of Items Observed:**

Quality Assurance Inspector (QAI) Fritz Belford was present on the date and times noted above in order to observe the fabrication and Quality Control (QC) functions performed by Steward Machine Company for the E2 Shear Key Anchorages for the SFOBB project. Material Test Reports (MTRs) for all materials used have been reviewed and approved by others at the XKT shop in Vallejo California prior to shipping to Steward Machine Company. The following items were observed:

STEWARD MACHINE - PLANT 1:
The QA performed a walkthrough at the shop to verify plates on site and to observe Steward Machine personnel at work machining and welding. Work performed at the Steward Machine shop as noted below:

Welder John Ray #469:
The welder was observed welding the S4B Lower Saddle Assembly north side cover passes utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 1G position. The welding parameters were observed adjusted and monitored by Certified Welding Inspector (CWI) Fred Hudson (Cert. #01061501) who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 30volts/295amps using 1/16” Class E70T-1 filler and 100% CO2 at 40cfm. Assembly S4B as noted above includes plates S4B-f4, S4B-g4, S4B-d4, S4B-c4, S4B-h4, S4B-b4 & S4B-a4. Welder John Ray was also observed performing weld repairs on the S10B assembly two Magnetic Particle Testing indications located on the non shear key side at 100mm from the assemblies East end. Weld repairs were performed utilizing WPS R-015-CT as verbally approved by SMR Arron Prchlik. The weld repairs were in way of indication excavations that were both 20 x 6 x 4mm deep.

Swing Shift Welders Jeff Hennington (#481) & Daniel Rowe (#73):
The welders were observed welding the S4B Lower Saddle Assembly south side cover passes utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 1G position. The welding parameters were observed adjusted and monitored by Certified Welding Inspector (CWI) Jimmy Brewer (Cert. #99061671) who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 30volts/300amps using 1/16" Class E70T-1 filler and 100% CO2 at 40cfm. Assembly S4B as noted above includes plates S4B-f4, S4B-g4, S4B-d4, S4B-c4, S4B-h4, S4B-b4 & S4B-a4.

S10B Assembly:
After weld repairs the assembly was relocated to the paint tent where it was observed shop blasted in the enclosed space to keep humidity below 80%. After blasting the assembly the blast profile was checked by shop NACE Inspector Chris Shiflett for the proper profile by using the extra course tape and micrometer as per ASTM D4417 Method C. After verification and accepting of the blast profile the painters then proceeded to mix the paint for coating of the assembly in the painting tent.

Plate Milling:
CNC Machine #211 milling plate S4C-g4 (Milling inside radius troughs)
CNC Machine #231 milling S10C assembly (Milling assembly ends)
CNC Machine #245 milling plate S3B-h3. (Milling inside radius)

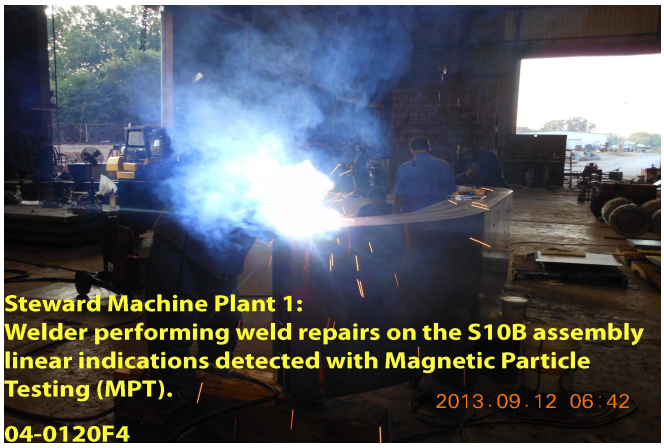
The following plates were noted staged throughout the shop in various stages of processing.
Bay 2 – Plates:
S3C-h3. Formed, stressed relieved and partially machined.
S4C-h4. Formed, stressed relieved and partially machined.

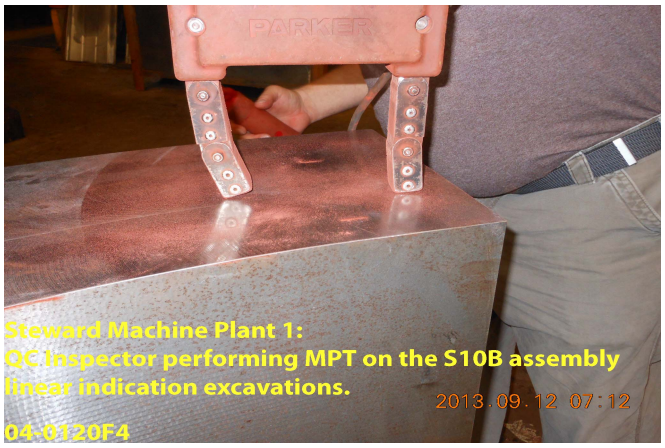
Bay 4 & 5– Plates:
S10B Assembly (Plates c1, d1, b1, a1, b2 & a2). (6 plts)
S10C Assembly (Plates c1, d1, b1, a1, b2 & a2). (6 plts)
S4B Assembly (Plates f4, g4, d4, c4, h4, b4 & a4). (7 plts)
S3B-a3. Formed, stressed relieved and partially machined.
S3B-b3. Formed, stressed relieved and partially machined.
S3B-c3. Formed, stressed relieved and partially machined.
S3B-d3. Formed, stressed relieved and partially machined.
S3B-f3. Formed, stressed relieved and partially machined.
S3B-g3. Formed, stressed relieved and partially machined.
S3C-a3. Formed, stressed relieved and partially machined.
S3C-b3. Formed, stressed relieved and partially machined.
S3C-c3. Formed, stressed relieved and partially machined.
S3C-d3. Formed, stressed relieved and partially machined.
S3C-f3. Formed, stressed relieved and partially machined.
S3C-g3. Formed, stressed relieved and partially machined.
S4C-a4. Formed, stressed relieved and partially machined.
S4C-b4. Formed, stressed relieved and partially machined.

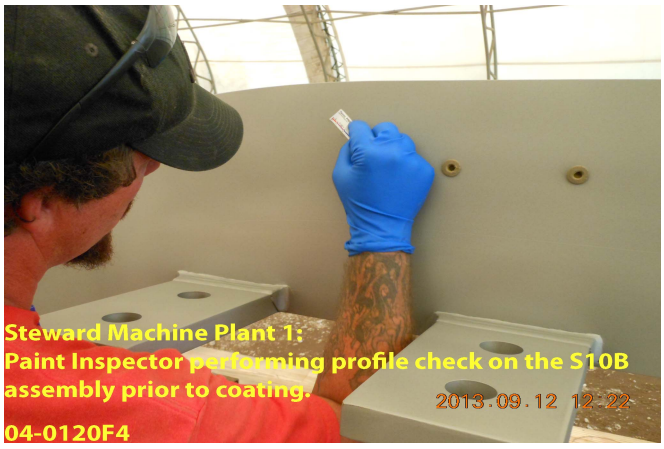
S4C-c4. Formed, stressed relieved and partially machined.
S4C-d4. Formed, stressed relieved and partially machined.
S4C-f4. Formed, stressed relieved and partially machined.

COMPONENT RELEASES.
None this day.

NON-DESTRUCTIVE TESTING (NDT).
The QA performed NDT on the following.
S10B Assembly Magnetic Particle Testing (MPT) Weld Repair:
- Two (2) Indication Excavations (MPT Acceptable. See TL-6028 for detailed information).
o MPT of repairs requires 48hr hold prior to final MPT. (Courtesy MPT performed irrelevant)




**Summary of Conversations:**
Steward Machine shop owner Whitney Debardelaben relayed to the QA Inspector and SMR Courtney Goldstein plans for release of the S10B assembly nearing completion. Mr Debardelaben relayed that the Magnetic Particle Testing (MPT) required on the weld repair performed this morning will have to be performed onsite after the 48hrs restriction has been met while the part is en route to the job site. Mr Debardelaben stated that the 48hr time restriction will not be met due to ABF's immediate requirement for delivery of the S10B assembly on Saturday morning after the coating has cured to a manageable level. The SMR Courtney Goldstein then informed the shop

owner that the part will not be Orange Tag but Blue Tagged for release due to a non-conformance report that will be submitted by the QA Inspector for the outstanding Magnetic Particle Testing (MPT) of the weld repair performed earlier. Mr Debardelaben expressed his understanding of the situation but stated the assembly will be loaded for delivery Saturday morning regardless of the Blue Tag.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Gary Thomas (916) 764 - 6027, who represents the Office of Structural Materials for your project.

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| **Inspected By:** | Belford,Fritz | Quality Assurance Inspector |
| **Reviewed By:** | Foerder,Mike | QA Reviewer |